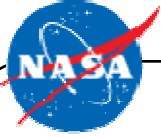


Cross-Program Launch Approval Engineering

Tools JPL Uses to Ensure Timely and Accurate Compliance with NEPA

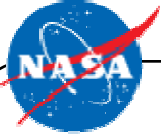
Presented by Paul Van Damme
JPL Deputy Cross-Program Launch Approval Engineering Manager
Jet Propulsion Laboratory, California Institute of Technology

September 24, 2008



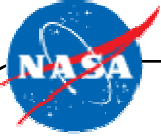
Agenda

- JPL Flight Project Practices
- Project Manager Training
- JPL Reviews and Management Meetings
- Environmental Compliance and Launch Approval Status System (ECLASS)
- JPL Task Plan Process



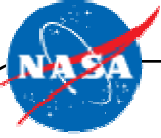
JPL Flight Project Practices

- JPL Flight Project Practices (FPPs) applies to space flight projects for which JPL has project management responsibility
- FPP establish requirements/processes for satisfying NASA imposed agency-wide requirements (e.g. NPR 8580.1 and NPR 7120.5D) on JPL via the prime contract
- Launch Approval Engineering FPP establishes requirements (i.e. “gate products” associated with standard project milestones) to assure timely NEPA (and associated) compliance by JPL Flight Projects
- Gate Product Launch Approval Engineering Requirements:
 - Environmental Compliance and Launch Approval Status System (ECLASS) Form at Mission Concept Review (MCR)
 - Launch Approval Engineering Plan at Project Mission System Review (PMSR)
 - Final NEPA Document at Preliminary Design Review (PDR)



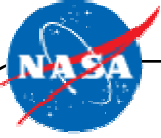
Project Manager Training

- JPL Project Manager Course
 - 5 day process focused course is for JPL Project Managers (or prospective managers) to familiarize them with JPL Flight Project Practices
 - Cross Program Launch Approval Engineering Manager
 - Provides basic understanding of Launch Approval Engineering requirements and processes and how those requirements relate to JPL Projects/Programs
 - Informs Project Managers that NEPA compliance is a “special area of emphasis” on JPL Report Card from NASA
 - Explains the ECLASS process and provides link to begin the Launch Approval Engineering compliance process



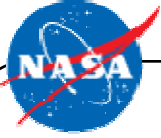
JPL Reviews and Management Meetings

- NEPA 'gate products' associated with project design reviews
 - MCR
 - PMSR
 - PDR
- JPL Quarterlies
 - Projects report status
 - Launch approval engineers regularly attend their respective project's quarterly presentations to compare current project status and information with that documented in:
 - ECLASS
 - LAE plan
 - NEPA document
 - If any discrepancies are found, the launch approval engineer works with the Project to confirm/clarify and then rectify the discrepancies



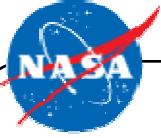
JPL Reviews and Management Meetings

- Project Manager non-compliance with Launch Approval Engineering requirements
 - The JPL Associate Director For Flight Program and Mission Success, at the request of the JPL Cross-Program Launch Approval Engineering Manager, provides a forum for addressing compliance issues with Project Managers at the monthly project managers meeting



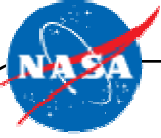
Environmental Compliance and Launch Approval Status System (ECLASS)

- ECLASS consists of a documented set of processes and procedures (JPL Rules) and an on-line tool (also called ECLASS) to assure compliance with the Launch Approval FPP
 - Simple system for facilitating JPL flight project compliance with NASA's environmental management and review requirements
 - Helps assures early identification and implementation of NASA/JPL activities for nuclear safety launch approval
- ECLASS performance requirement
 - Provide timely project content information on 100% of the flight and instrument projects ongoing at JPL



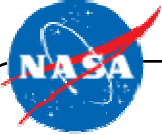
Environmental Compliance Launch Approval Status System (ECLASS)

- ECLASS was developed at JPL in the late 1990's in response to:
 - Interest by Deputy AA for SMD (then Office of Space Science) to improve management of NEPA compliance for projects, especially in light of the large number of potential SMD missions being considered
 - Launch Approval Engineering Lessons Learned
- Development History
 - Hardcopy questionnaire developed and implemented (1998)
 - Online system implemented (March 2001) where project managers directly input project information
 - Added reporting features (2001)
 - Added the tracking of JPL Proposals to system (August 2003)
 - Enhancements (Ongoing)



ECLASS Scope & Features

- ECLASS maintains project content information for:
 - JPL proposals
 - JPL-managed 'flight projects'
 - Instrument projects managed by JPL, for flight projects managed by other NASA centers
- ECLASS does not maintain project content information for:
 - JPL construction of facilities funded projects
 - JPL task plans
- ECLASS features
 - Web-based
 - Separate proposal, mission (e.g., flight project), and instrument project forms
 - Report builder
 - Launch Approval Engineering (LAE) plan generator
 - Capable of saving tailored reports
 - Allows the creation of a report detailing certain aspects of projects currently in ECLASS (for example those proposing the use of radioactive materials)
 - Report can be saved and re-run on a weekly, monthly, quarterly basis as the information in ECLASS is updated
 - Automatic E-mail Notification
 - Automatically sends e-mail notices both to the individual completing the ECLASS input form and the launch approval engineer responsible for reviewing the form
 - Notifications sent as any ECLASS input information changes or additional project information is provided



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Environmental Compliance / Launch Approval Status System

ECLASS

JPL NASA

Forms
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Continue

Choose Form Type

☐ Proposal Form

☒ Mission Form

☐ Instrument Form

☐ All Forms

Continue

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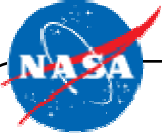
Help

ECLASS

JPL NASA

Environmental Compliance / Launch Approval Status System

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Forms
Report Compliance
Builder Report

Log Out Help

Environmental Compliance / Launch Approval Status System

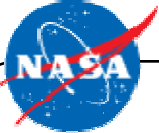
You are the Reviewer for the following ECLASS Mission Form(s)

State	Mission Name	Mission Description	POC	Reviewer	PDR Date	CDR Date
●	CloudSat	To provide from space the first global survey of cloud profiles and cloud physical properties, with seasonal and geographical variations, thereby contributing to predictions of weather, climate and the cloud-climate feedback problem.	Lam, Try	Ryan, Victoria S.	Sep 15, 2000	Jul 15, 2001
●	Mars Reconnaissance Orbiter	MRO will be launched in August 2005 by an Atlas V from KSC. It will conduct remote sensing science observations, characterize sites for future landers, and provide critical telecom/navigation relay capability for follow-on missions.	Jones, Ross M.	Ryan, Victoria S.	Jul 15, 2002	Apr 15, 2003
●	Deep Impact	Impact comet Tempel 1 and observe results of impact to understand the structure and composition of a comet nucleus	Muirhead, Brian K.	Ryan, Victoria S.	Mar 15, 2001	Jan 15, 2005

○ = Open ● = Closed

Other Existing ECLASS Mission Form(s)

State	Mission Name	Mission Description	POC	Reviewer	PDR Date	CDR Date
○	Aquarius	Aquarius is an Earth orbiting mission, will produce monthly, global sea surface salinity maps using an L-Band instrument. Aquarius mission objectives will be to resolve missing physical processes that link the water cycle, the climate, and the ocean.	Durham, David M.	Graham, Janis U.	Jun 28, 2005	Aug 29, 2006
○	Dawn	Fly to and orbit the main belt asteroids 1 Ceres and 4 Vesta.	Brown, G Mark	Graham, Janis U.	Oct 14, 2003	Jun 15, 2004
○	DSN Array Project	This Project will increase the capability of the DSN by a factor of 40 over that of the current 70-m antenna capability. See Comments for further info.	Gatti, Mark S.	Graham, Janis U.	Oct 15, 2007	Oct 15, 2008
○	DSN Array Prototype(s)	A series of three prototype arrays have been proposed to support development of the DSN of the Future. These include 1) Engineering Prototype Array, 2) Manufacturing Prototype Array, and 3) Uplink Prototype Array.	Gatti, Mark S.	Graham, Janis U.		
○	EPOXI	Deep Impact Extended Mission to Comet Boethin. Discover Mission of Opportunity that has been approved.	Sharow, Robert F.	Graham, Janis U.		



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Environmental Compliance / Launch Approval Status System

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Printable Version

LAE Plan

MISSION FORM

Last changed by [Chirino, Faustino R.](#) on 08/09/2005 13:02

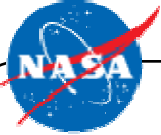
A. CONTACT INFORMATION

A1. Input Date Aug 29, 2002	A2. Closed Date	A3. Point of Contact (POC) Dwyham, David M.	A4. Reviewer Chirino, Faustino R.
--------------------------------	-----------------	--	--------------------------------------

B. MISSION INFORMATION

B1. Mission Name (Mandatory) <input checked="" type="checkbox"/> Aquarius	B6. Phase A Start Date <input type="checkbox"/> Dec 15 2003	B7. Phase A End Date <input type="checkbox"/> Oct 30 2005
B2. Mission Description (Mandatory) <input type="checkbox"/> Aquarius is an Earth orbiting mission, will produce monthly, global sea surface salinity maps using an L-Band instrument. Aquarius mission objectives will be to resolve missing physical processes that link the water cycle,	B8. Phase B Start Date <input type="checkbox"/> Oct 31 2005	B9. Phase B End Date <input type="checkbox"/> Apr 6 2009
	B10. Phase C/D Start Date <input type="checkbox"/> Mar 6 2009	B11. Phase C/D End Date <input type="checkbox"/>
	B12. Launch Date <input type="checkbox"/> Mar 6 2009	B13. PMSR Date <input type="checkbox"/>
	B14. PDR Date <input type="checkbox"/> Jun 28 2005	B15. CDR Date <input type="checkbox"/> Aug 29 2006
	B16. PNAR Date <input type="checkbox"/>	B17. NAR Date <input type="checkbox"/>
	B18. 10% Expend. Date <input type="checkbox"/>	
	B19. Other Milestone Date(s) <input type="checkbox"/> CONAE PDR 080205/CDR 10040	
B21. Managing NASA Center <input checked="" type="checkbox"/> Jet Propulsion Laboratory	B29. Launch Vehicle(s) <input checked="" type="checkbox"/> Delta II	
B22. Managing NASA Center Program Manager Diane Evans	Select potential launch vehicle(s):	
B23. Proposal Manager		
B25. HQ Code Responsible <input checked="" type="checkbox"/> Science Mission Directorate	B30. Launch Site(s) <input checked="" type="checkbox"/> US - Vandenberg AFB	
B26. NASA HQ Program Executive <input type="checkbox"/> Eric Ianson		

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The ECLASS form is divided into three main sections:

A. Contact Information



B. Project Information



C. Key Planning Considerations



MISSION FORM

Last changed by [Chirino, Tino](#) on 12/06/2005 2:

A. CONTACT INFORMATION

A1. Input Date Dec 6, 2005	A2. Closed Date	A3. Point of Contact (POC) Doe, Jane	A4. Reviewer Chirino, Tino
-------------------------------	-----------------	---	---

B. MISSION INFORMATION

B1. Mission Name (Mandatory) <input type="text"/> <small>Some Mission</small>	B6. Phase A Start Date <input type="text"/>	B7. Phase A End Date <input type="text"/>
B2. Mission Description (Mandatory) <input type="text"/> <small>Some Mission description.</small>	B8. Phase B Start Date <input type="text"/>	B9. Phase B End Date <input type="text"/>
	B10. Phase C/D Start Date <input type="text"/>	B11. Phase C/D End Date <input type="text"/>
	B12. Launch Date <input type="text"/>	
	B13. PMSR Date <input type="text"/>	
	B14. PDR Date <input type="text"/>	B15. CDR Date <input type="text"/>
	B16. PNAR Date <input type="text"/>	B17. NAR Date <input type="text"/>
	B18. 10% Expend. Date <input type="text"/>	

C. KEY PLANNING CONSIDERATIONS

C2a. Potential for Anything Returning to Earth
☒ Yes ☐ Maybe ☐ No
** If the answer to C2a is No, skip to C3a; otherwise, continue.

C2b. What would return to Earth

C2c. Where would it return to Earth

C2d. Has the NASA Planetary Protection Officer been contacted regarding this issue
☐ Yes ☒ No

C3a. Potential for carrying as a payload disease producing pathogenic microorganisms or materials extremely hazardous to human health
☒ Yes ☐ Maybe ☐ No
** If the answer to C3a is No, skip to C4a; otherwise, continue.

C3b. Has the NASA Planetary Protection Officer been contacted regarding this issue
☐ Yes ☒ No

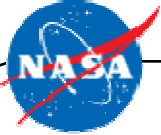
C4a. Potential for Radioisotope Power System
☒ Yes ☐ Maybe ☐ No
** If the answer to C4a is No, skip to C5a; otherwise, continue.

C4b. Explain why Radioisotope Power System is or maybe a potential

C4c. Are Radioisotope Power System trade studies available
☐ Yes ☒ No

C4d. If yes, who is the trade studies contact

C5a. Potential for Radioisotope Heater Units



ECLASS also has LAE-specific sections:

D. LAE Plan Milestones 

D. LAE PLAN MILESTONES

D1. Draft LAE Plan

Received LAPG GS Concurrence: ☐ ☐

D2. Approved LAE Plan

Received CPLAEM Concurrence: ☐ ☐

E. NEPA Milestones 

E. NEPA MILESTONES

☐ E1a. Is adequately covered in an existing

☐ Environmental Assessment (EA) ☐ ☐ ☐
entitled Select document:

☐ Environmental Impact Statement (EIS) ☐ ☐ ☐
entitled Select document:

☐ E1b. Qualifies for Categorical Exclusion as described by paragraph 4.2, NPG 8580.1, and NASA NEPA regulations at 14 CFR §1216.305(d), and has no special circumstances which would suggest a need for an Environmental Assessment

☐ ☐

☐ E1c. Is exempt from NEPA requirements under the provisions of Executive Order (EO) 12114. Requires preparation of EO 12114 Documentation

☐ ☐

☐ E1d. Has no environmental impact as indicated by the results of

☐ Environmental Evaluation Checklist ☐ ☐

☐ Environmental Analysis ☐ ☐

☐ E1e. Will require the preparation of an

☐ Environmental Assessment (EA) ☐ ☐

Letters to Regulators Date ☐ ☐

Draft EA Date ☐ ☐

Final EA Date ☐ ☐

FONSI Date ☐ ☐

☐ Environmental Impact Statement (EIS) ☐ ☐

NOI Date ☐ ☐

Draft EIS Date ☐ ☐

Final EIS Date ☐ ☐

RoD Date ☐ ☐

E2. Will require the preparation of an AF 813

☐ ☐

F. NUCLEAR SAFETY LAUNCH APPROVAL MILESTONES

F1. Safety Analysis Report (SAR) Databook

☐ ☐

F2. DFSAR

☐ ☐

F3. Final SAR

☐ ☐

F4. Safety Evaluation Report (SER)

☐ ☐

**F. PD/NSC-25
Milestones** 

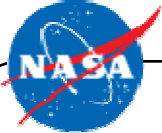


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Environmental Compliance / Launch Approval Status System

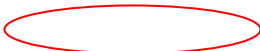



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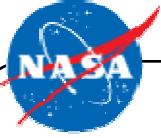
Help

Launch Approval Plan Generator

Shortened Version of the Project Name Aquarius

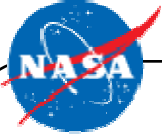
	Document	Dependencies
<input type="button" value="Submit"/>	Concurrence Cover Page 	Program Manager: Diane Evans Anticipated Start Date: <input type="text"/> Anticipated Duration: <input type="text"/> NEPA Milestone Settings "Is adequately covered in an existing..." Option: Selected "EA" Option: Selected "NASA Routine Payloads on Expen..." Option: Selected
<input type="button" value="Submit"/>	Printable ECLASS Form	
<input type="button" value="Submit"/>	Assumptions and Cost Estimates  	Phase B Start Date: 12/15/2003 Phase C/D Start Date: 10/31/2005 Involve Sample Return: No Involve RHUs: No Involve RPSS: No Involve a Nuclear Fission Reactor: No Involve other Radioactive Material: No Create Significant Public Controversy: <input type="radio"/> Yes <input checked="" type="radio"/> No Period of Performance (FY): <input type="text"/> Work Force Number of Engineers: <input type="text"/> Workmonths: <input type="text"/> Estimated Cost FY: <input type="text"/> Cost: <input type="text"/>
<input type="button" value="Submit"/>	Launch Approval Schedule 	Phase B Start Date: 12/15/2003 Phase B End Date: 10/30/2005 PDR Date: 06/28/2005 Phase C/D Start Date: 10/31/2005 Phase C/D End Date: 04/06/2009 CDR Date: 08/29/2006 Launch Date: 03/06/2009

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JPL Task Plan Process

- All NASA-sponsored and reimbursable (non-NASA) work requires a JPL task plan per the NASA prime contract
- JPL Task plan NEPA review process was instituted in 2000 to assure potential project/task compliance with NEPA
- Each task plan is reviewed by the Launch Approval Engineering Group (LAEG) for NEPA compliance requirements applying a NASA-approved NEPA checklist
- The LAEG supervisor and JPL Cross-Program Launch Approval Engineering Manager provide a recommended Record of Environmental Consideration to the JPL NASA Management Office (NMO)
 - The review culminates in either a Categorical Exclusion or request for further environmental analysis
- JPL NMO may delay authorizing the work under the Task Plan (or revision) to begin (or resume) until the environmental documentation review is complete



JPL Task Plan NEPA Review Process

JPL Task Plan NEPA Review Process

